

Amendments to the Specification

Please replace the Abstract paragraph on beginning on page 21, line 7 with the following amended paragraph:

An apparatus and method is disclosed for a variable bandwidth X-DSL modem. The A modem implements implementing a discrete multi-tone (DMT) line code with varying selectable tone spacing of a multi-tone communication channel depending on the bandwidth availability on selected a corresponding subscriber lines line . For short subscriber loops that qualify for high data rates the spacing between tones in a tone set is expanded to support the higher data rates. A DFT/IDFT engine is implemented in the DSP with a DFT portion to convert digitized tone sets on a receive path for each channel to digitized symbols and an IDFT portion to convert the digitized symbols on the transmit path to digitized tone sets. The DFT/IDFT A Fourier transform engine in the modem provides variable selectable tone spacing for the at least one each multi-tone communication channel by selection of a processing interval for each successive tone set of the multi-tone communication channel. A variable rate interpolator couples to the IDFT portion of the DFT/IDFT engine and sets the sampling rate at the output of the IDFT to match the sampling rate of a digital input to the digital to analog (DAC) portion of the analog front end (AFE). A variable rate decimator provides corresponding capability on the receive path. A scheduler couples to the DFT/IDFT engine for scheduling channels to be processed by the DFT/IDFT engine during each processing interval. An initialization procedure is used to determine appropriate tone spacing to be used for the channel based on the loop qualifications of the channel.